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PHILOSOPHICAL TRANSACTIONS.

For the Months of *April, May, and June, 1678.*

The Contents.

Monsieur Bullialdus's Observation of the Occultation of Saturn by the interposition of the Moon. A Relation of Red Snow; communicated by the Honourable Mr. Boyle. Anatomical Observations of the Structure of the Nose; made by Monsieur du Vernay. Observations of some Animals, and of a Strange Plant, made in a Voyage into the Kingdom of Congo; by Michael Angelo de Guattini, and Dionysius de Placenza. Of the Sorbus Pyriformis, observed, by Mr. Edmond Pitt to grow wild in England. A Relation of a Child, which remained Twenty six years in the Mothers belly. An Account of some Books: I. Exercitationes tres; by Dr. Wallis. II. Historiæ Animalium Angliæ tres Tractatus; by Mr. Lister. III. Lectures and Collections; by Mr. Hooke. Advertisement of the continuance of the Mechanical Exercises; by Mr. Moxon. And of a New kind of Globe; invented by the Right Honourable the Earl of Castlemain.

Societatis Regiæ *Anglicæ* Illustrissimis, celeberrimis atque Sapientissimis Viris *Ismael Bullialdus, S.P.D.*

Illustrissimi, Celeberrimi ac Sapientissimi Viri,

Hanc à me habitam occultationis Saturni à Luna intercepti observationem ad vos transmittere, à vobis olim in Societatem vestram transcriptus, decrevi. Eam neque Tabula Rudolfinæ, neque meæ Philolaïca (etsi minus, quàm illa, in punctis

initii & finis a cælo discrepent) exactè repræsentant, quod ex Lunnæ Motu, cujus quarta inequalitas nondum benè cognita est, accidit: partimque ex Saturni motu discrepantia illa oritur; quem Tabulæ Rudolfinæ gradus unius semisse, meæ vero triente, quàm in cælo appareat, penes longitudinem promotiorem ostendunt. Celeberrimi Viri Joh. Hevelii Observationes, quas in lucem intra annum prodituras sperare me iussit ipse, expecto, quarum ope adjunctus Tabularum mearum correctionem aggressurus sum, si vitam Deus prorogarit, cujus annum Septuagesimum tertium decurrentem, si ille opt. max. concesserit, Septemb. proxime venturi die 28 complebo. Ut vos, Illustrissimi Viri, incolumes servet, prosperaque omnia largiatur, totis animi viribus precor, quos sincero pectore obsequiosissime veneror, ac officiosissime saluto. Valete & me vestri cultorem amate.

Scribebam Lutetia Parisiorum

anno 1678. Maii die 25. st. no.

Calculus ex Tabulis Philolaicis Ismaelis Bullialdi apparentis

♄ & ♄, quæ contigit Februarii die 27. post occasum ☉

anno 1678. exhibet.

Locum ☉ verum × gr. 9. '43. "19.

♄ ♄ 3. 46. 56. Lat. Mer. g. 1. '20. "0. in Zodiaco.

♄ ♄ 3. 46. 56. Lat. Mer. 1. 38. 0.

Caditq; hæc ♄ vera Hor. 7. '33. "26. Temp. med. Hora vero 7. '23. "31.

T. App. Parisiæ.

Parallaxis Lunn. in Longit. gr. 0. '23. "40. occasum versus.

Latitud. 0. 24. 1. Semid. ♄ politas '15. "48.

Ad Hor. seq. H. 8. '23. "31.

Parallax Lunn. in longit. gr. 0. 31. 15. Parallaxis Horiz. altit. '56. "11.

Differentia Parallaxium 0. 7. 34.

Lunn. mot. Horar. verus 0. 30. 51.

Ablata parallax. differ. visus 0. 23. 17. per quem visum Horar. divisa priori parallaxi Longitud. datur Intervall. add. H. 1. '1. "0. visa itaque cadit H. 8. '24. "31.

Intervallo temporis reperto congruit motus Lunn. verus gr. 0. '31. "22. major "7. quàm parallaxis posterior, rectè igitur inventa est ♄ visæ tempus.

Lat. Lunn. vera Merid. desc. gr. 1. '22. "20.

Parallax. latit. in Merid. 0. 24. 37.

Additâ latit. veræ datur visa 1. 46. 57.

Lat. Saturn. Mer. 1. 38. 0.

Lunn. centrum australius ♄ 0. 8. 57.

Ad Semihor. anteced. visam H. 7. '54. "31.

Parallax. longit. *Lun.* gr. 0. '27. "17.

Minor quā reperta Temp. visæ δ . 0. 3. 58.

Semihorar. *Lun.* 0. 15. 25.

Ablatâ differ. Paral. Semihor. visus 0. 11. 27.

Parallax latit. 0. 24. 27.

Latit. vera *Lun.* Mer. Desc. 1. 21. 5.

Ergo additâ Parallaxi visâ 1. 45. 32.

Centrum *Lun.* infra *Saturn.* 7. 32.

Ad Semihor. sequentem visam H. 8. '54. "31.

Parallax. longit. *Lun.* gr. 0. '34. "30.

Major paral. Temp. visæ δ . 0. 3. 15. quæ ablata a motu Semih. vero dat. Semihorar. visum 0. 12. 10.

Parallax. lat. in Austrum 0. 25. 29. Lat. α v. gr. 1. '23. "35. ergo dat.

Latit. *Lun.* visâ Mer. Desc. 1. 49. 4. Centr. α infra η gr. 0. '11. "4.

Scrupula casus gr. 0. 12. 42.

Emerlionis 0. 12. 42.

Maxima immersio antecedit

δ visam gr. 0. '3. "2. Cadit ideo max. immersio H. 8. '21. "36.

Tandem divisis scrupulis incidentiæ per semihorar. visum ante visam δ dabitur intervallum temporis ab initio ad maximam immersionem '33. "18.

Iisdemque divisis per semihorarium visum post visam δ dabitur intervall. tempor. à maxima immersione ad finem '31. "15. Totaque duratio H. 1. '4. "33.

Parisiis itaque hujus occultat. η interventu α factæ, incidit Febr. die 27.

Initium H. 7. '48. "18.

Maxima immersio 8. 21. 36.

Visa δ 8. 24. 38.

Finis 8. 52. 51.

Tabulæ cælo non consentiunt. Observavit siquidem Bullialdus initium alto sup, Horiz. ad occasum Capite Andromedæ gr. 18. '11. unde datur Hora à Meridie 7. '20. T. A. sed med. H. 7. '29. "55.

Finem vero vidit alta ad occas. *Cinguli Androm.* australiori magn. 2. gr. 21. '17. unde Hora à meridie colligitur T. A. 8. '30. "22.

Monere hic necessum est Tabulas *Philolaïcas* η promotiorem in Longitudine ostendere, quàm in cælo apparet, scrupulis primis ut-minimum 19. ita ut η tunc fuerit in cælo in π . gr. 3. '28. & Lat. Austr. g. 1. '38.

Posito hoc η loco H. 7. '20. Temp. app. initioque occultationis, datur.

Parallaxis *Lun.* in Longit. gr. 0. '23. "25.

Lat. in Austrum 0. 24. 1.

Lat. *Lun.* vera Mer. D. 1. 18. 11.

Addita parallaxi datur visâ 1. 42. 12. & α centrum Australius

Saturn. 4'. 48''. pro quibus 5' accipiemus. Unde colligimus differentiam longitudinum η & centri α 14'. 59''. fuit itaque Centrum α visum in π gr. 3. 13'. 11''. cui cum addita fuerit parallaxis longit. habebimus prope verum, intra pauca scrupula secunda locum α verum in Zodiaco π gr. 3. 36'. 26''. Itaque *Saturni* longitudinem superavit *Luna* 8'. 36'', quæ vero motu conficit temporis scrupul. 16'. 46''. ita ut vera δ ϵ & η inciderit H. 7. 3'. 14''. T. A. at Medio H. 7. 13'. 9''. Tabulæ ostendunt ϵ in π gr. 3. 36'. 45''. Cælum vero exhibuit in gr. 3. 18'. *Gem.* propterea motus longit. *Lun.* excedit cælum 8'. 45''.

Juxta Observationem incidit vera δ η & ϵ T. A. *Parisiis* H. 7. 3'. 14''.

Parall. Longit. *Lun.* gr. o. 20'. 58''.

Latit. in Austr. o. 24. 18.

Ad Hor. sequentem H. 8. 3'. 14''.

Parallaxis Longit. *Lun.* gr. o. 28. 58.

Excedit parallax. priorem o. 8. o. quæ differ. ablata ab Hor. vero exhibet visum Horar. o. 22. 51. per quem divisa parall. temp. ver.

Dat. interv. inter ver. & vis. h. o. 55. 2. ad tempori veræ.

Visa itaque cadit H. 7. 58. 16.

Parallaxis Longit. o. 28. 16.

Latit. o. 24. 18.

Latit. vera gr. 1. 20. 33.

Visa ergo 1. 44. 51. Centrum α australius η 6'. 50''.

Intervallo inter visam & veram congruit motus α verus gr. o. 28'. 17'', æqualis fere parallaxi Temp. visæ, unde momentum hujus rite inventum esse constat.

Ad semihor. anteced. visam H. 7. 28'. 16''.

Parall. Longit. α o. 24. 28.

Minor inventa tempore visæ o. 3. 48.

Semihorarius ergo visus o. 11. 37.

Ad Semih. seq. visam H. 8. 28. 16.

Parallax. Longit. α gr. o. 31. 47.

Major inventa Temp. visæ δ o. 3. 31.

Semihorarius ergo visus o. 11. 56.

Ad Horam 8. 30'. quo momento η exivit ϵ .

Parallax. Longit. α . o. 32. 3.

Latit. o. 24. 49.

Latit. α vera M. Desc. 1. 21. 52.

Latitudo visæ. 1. 46. 41. Centr. α infra η 9'. 41''.

Ex superioribus latitud. α & h colliguntur simul tota scrupula durationis $28'. 24''$. distantia quæque max. immersionis à visa δ reperitur $1'. 41''$. temporis, quo max. immersio antecedit visam. Quare illa max. imm. contigit H. 7. 56'. 35''.

Data sunt scrup. dimidiæ durationis $14'. 12''$. quæ divisa per semihorar. visum ante visam $11'. 37''$. exhibent incidentiam $36'. 41''$. divisa vero per visum semihorar. post visam δ exhibent emersionem $35'. 42''$. ut tota duratio sit H. 1. 12'. 23''. major obserata $2'. 1''$.

Contigit itaque *Parisiis* hujus occultationis ex superiori calculo, & ex supposito h loco.

Initium Hor. 7. 19'. 54''. observatio H. 7. 20'. 0''.

Max. immerf. 7. 56'. 35.

Visa δ 7. 58'. 16.

Finis 8. 32'. 17. Observ. 8. 30. 22.

Locum h minus promotum suppositum observatione tultri quam habuimus mense *Decemb.* 1677. die 29. *ft. no.* paulo ante Hor. 9. à Meridie H. 8. 58'. tunc enim vidimus in eodem azimutho inque Nonagesimo Eclipticæ gradu ab Horizonte h & *Boreum* oculum δ , qui infra h erat unum Planetam & fixam eandem in Zodiaco Longitud. obtinere deprehendimus. Juxta *Tychonem* fuit Stella fixa in *Gemin.* gr. 3. 58'. 53''. cum lat. Austr. gr. 2. 36'. 30''. tunc fuerunt motus \odot & h juxta Tabulas Philolaïcas.

	S. gr. / "
\odot Long. med. ab Aquin.	9. 8. 50. 0.
Aphelium	69. 6. 48. 22.
Anom. med.	6. 2. 1. 38.
Æquata	6. 2. 3. 46.
Æquatio add.	0. 0. 4. 23.
Locus <i>Sol.</i> verus	\mathcal{W} 8. 54. 23.

h Longit. ab Æq. media	2. 10. 4. 11.
Aphelium	\mathcal{T} 28. 26. 5.
δ	69. 21. 4. 5.
Anomal. med.	5. 11. 38. 6.
Æquata	5. 10. 35. 35.
Æquatio subtr.	0. 2. 13. 46.
Locus h ex \odot visi	\mathcal{H} 7. 50. 25.
Anomal. Orbis	7. 1. 53. 58.
Æquatio max.	0. 6. 15. 0.
Pars Anom. orb. congr. Sub. 0.	3. 32. 54.
Locus h ex <i>Terra</i> visi	\mathcal{H} 4. 17. 31.

Loci h ex \odot distantia δ .	10. 16. 46. 20.
Sinus latit.	0. 2. 1. 30.
Scrup. prop. latit.	0. 0. 58. 27.

Decre-

Saturnus ergo juxta nostras Philolaïcas debuit esse in \mathcal{H} gr. 4. 17'. 31''. Austr. lat. gr. 1. 52'. qui nobis observatus in \mathcal{H} gr. 3. 58'. 53''. unde cœlum in longitudine minore h ostendit, quam Tabulæ exhibent, scrupulis primis circiter 19', qui Tabularum excessus perduravit ad occultationem h à α factam, & adhuc perdurare excessum illum certum est, quod ita esse ex aliis observationibus cog-

	S.	gr. , "	cognovimus. In hac por-
Decrementum	o.	o. 0.24.	ro observatione adhibita
Scrup. prop. Decrem.	o.	o. 47.30.	Illustissimi Viri <i>Joh. He-</i>
Pars decem. iis compet.	o.	o. 0.17.	<i>velii</i> Lunarisi disci descri-
Scr. prop. Æquata.	o.	o. 58.10.	ptione, in illa limbi parte,
Sinus iplis congr.	o.	1.57.30.	quæ in recta linea, à me-
Latit. h Mer. Az.	o.	1.52. 2.	dio montis <i>Berosi</i> , per
			montes <i>Kipheos</i> ducta,
			paulo supra <i>Alannum</i> montem, infraque terminos australes paludum
			hyperborearum sita est, <i>Saturnum</i> emeruisse aspeximus, quod cum
			instituto posteriore calculo prope concordat.

Calculus occultationis h à c secundum Tabulas Rudolfinas acceptis locis c et h ex Clariss. Viri Joh. Heckeri Ephemeridibus.

Febr. D. in Merid. Longit. Latit. M. Desc. Longit. Latit. M. Asc.
 27. c & gr. 29.27'.19". gr. o. 55'. h II g. 3.57'. g. 1.42'.
 28. III 11.53. 2. I. 58. 4. o. I. 41.

Locus c in Orbita 829.27'.19". in Meridie reperitur, reductus vero ad Zodiacum ablata reductione 3'.20". est & 29.23'.59". abest igitur à h gr. 4.33'.1".

c diurnus est gr. 12.25'.43". Hinc horarius in orbita 31'.4". h diurnus est 3'. ergo horar. est 7". c horar. à h est 30'.57".

Cortigit ergo vera c ac h conjunctio juxta *Tabulas Rudolfinas Uraniburgi* D. Febr. 27. h. 8 47'. 24". T. M. à quo ablata æquatione temporis 14'. datur Temp. App. hor. 8. 33'. 24". *Parisiis* vero fuit hor. 7.53'.24". Semid. c 15'.26". Parallax. Horiz. Alt. 60'.2".

c Parallaxis Longit. gr. o. 29'.28".

Latit. o. 25. 55.

Ad Hor. sequent. 8. 53'. 24".

Parall. Longit. c gr. o. 36. 56.

Latitud. o. 27. 9.

Parall. Longit. hoc momento excedit antecedentem repertam tempore veræ o. 7. 28. qui excessus ablati ab c Horar.

Vero à h dat. visum H. o. 23. 29.

Per hunc divisa parallaxi tempore veræ conjunctionis colligitur inter veram & visam intervall. H. 1. 15'. 19". add. Temp. vera c. Ergo facta est visa *Parisiis*, Hor. 9. 8. 9. Intervallo vero temporis congruit verus motus Longit. c 38. 46.

Tunc fuit Parall. c Longit. gr. o. 38'. 52".

Latit. o. 27. 37.

Cum ergo motus c verus congruens intervallo inter visam & veram æqualis sit parallaxi tempore inventum exactè est tempus visæ.

Ad

(975)

Ad semihor. anteced. visam Hor. 8. 38'. 46".
Parall. longit. \odot gr. 0.35'. 20". minor parallaxi temp. visæ.
Differentia ambar. 3. 32. ablata à \odot semihor. vero.
Relinquit semihor. visum 0. 11. 57.
Latit. parallax. 0. 26. 47.

Ad semihor. seq. visam H. 9. 38'. 46".
Parallax. longit. \odot gr. 0. 41. 7. major quam parallaxis
Tempore visæ, ambar. differ. 0. 2. 15. ablata à semihor. \odot .
Vero relinquit semihor. visum 0. 13. 4.
Parallax. lat. 0. 28. 41.

Tempore visæ \odot Lat. \odot vera 1. 18. 58.
Addita Paral. datur vis. M. D. 1. 46. 33.
Latit. Saturn. 1. 42. 0.
Centrum \odot est australius h 0. 4. 33.

Scrupula durationis totius 0. 29. 30.
Dimidiæ, seu incidentiæ 0. 14. 45.
Divisa per semihor. visum antecedentem visam
 \odot exhibent. temp. incid. H. 0. 37. 2. eadem divisa per semihor. vi-
Visam \odot dant temp. emerf. 0. 33. 50. (sum sequentem.
Totam durationem H. 1. 10. 52.
Max. immersio antecedit visam \odot temporis 1'. 9".
quare cadit illa H. 9. 7. 0.
Parisis ergo videri debuerunt
Initium H. 8. 29'. 58"
Max. imm. 9. 7. 0.
Visa \odot 9. 8. 9.
Finis 9. 40. 50.

*Juxta Tabulas itaque Rudolfinas incipere debuit hæc occultatio,
cum jam totam transactam fuisse observavimus.*

Extract